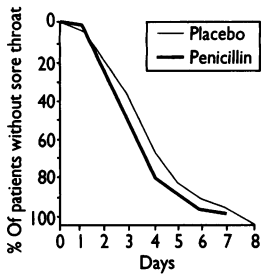

Percentage of patients without symptoms after presenting to a general practitioner with sore throat and being randomised to penicillin (n=256) or placebo (n=272). Reproduced from Whitfield and Hughes[8] with permission

report of the acceptability of no antibiotic treatment in otitis media[13] and a controlled trial of no antibiotic prescription with advice in sore throat[14] indicate that most patients will find explanation and treatment of symptoms an acceptable alternative even in painful upper respiratory conditions.

Could a subgroup be targeted to improve outcome?

Given that the evidence for antibiotic prescribing in sore throat is not good for the normal range of presentations, could particular subgroups be identified? Unfortunately symptom clusters do not seem to be a good indicator of streptococcal infection or antibiotic responses, and the sensitivity and specificity of the throat swab are low—26-30% and 73-80% respectively.[15] Although a rise in streptococcal antibody titres would be definitive, the delay, cost, and inconvenience of serial titres rule out their routine use.

Costs of prescribing

The probable marginal benefit of prescribing in sore throat must be weighed against the possible costs. Routine prescribing for sore throat encourages patients' dependence and reattendance at surgery,[14] taking up valuable time of the doctor and the patient for a self limiting condition. In addition there are financial costs to the patient, surgery, and health service and side effects of antibiotic use such as allergy (3·8%),[16] and diarrhoea (10% to 60% of children).[17,18] The estimated incidence of anaphylaxis with penicillin is 1·5-4 cases per 10 000 patients with two deaths per 100 000.[16] If every case of acute pharyngitis and acute exudative tonsillitis were treated with penicillin—that is, about 500 cases per general practitioner per year[19]—in the average working lifetime a general practitioner would have roughly a one in three chance of having a patient die from anaphylaxis after treatment for sore throat. This is slightly higher than the chances of nephritis or rheumatic fever after a sore throat, neither of which have a high death rate.

We argue that the evidence for benefit of prescribing for sore throat is marginal, and the costs to the patient and health service are likely to outweigh any possible benefit. Until evidence for the use of antibiotics in sore throat comes from randomised clinical trials, general practitioners should continue to explore the psychosocial reasons behind consultations and negotiate with their patients to improve the management of the symptoms of sore throat without relying on antibiotics.

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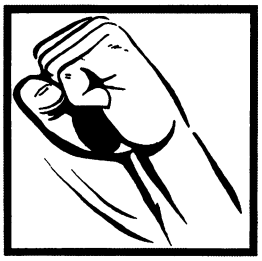
Careful prescribing is beneficial

Pesach Shvartzman



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Pesach Shvartzman, *chairman*

The annual incidence of sore throat in general practice has been estimated at 100 per 1000 people per year.[1] Some doctors prescribe antibiotics for every patient presenting with a sore throat. Others use clinical scoring systems to establish the probability of group A β haemolytic streptococcal infection. They use the score result together with a knowledge of the prevalence of streptococci in the community to derive a treatment strategy.[2] Thus the management of sore throat, although essentially simple, illustrates Osler's dictum that medicine is a science of uncertainty and an art of probability.[3]

Bacteria can be isolated from 40-50% of patients with sore throat who present to general practitioners, although up to 30% of those with positive cultures may be carriers.[4] Group A β haemolytic streptococci are the most common bacterial pathogens, with *Corynebacterium diphtheriae*, and group C and group G streptococci much rarer. An increasing number of cases may be due to synergistic infection with *Staphylococcus aureus, Moraxella catarrhalis, Haemophilus influenzae*, or anaerobic organisms. Recently, evidence has emerged that some cases of non-streptococcal pharyngitis may be associated with mycoplasma and chlamydial infections.[4]

Reduction of complications

A large study of patients with acute tonsillitis in 17 European countries found that 90% were treated with antibiotics.[5] Since up to half of patients with sore throats have positive bacterial cultures, it is natural to consider such treatment for every patient. This policy is supported by a recent analysis of strategies for dealing with sore throat in which the likelihood of rheumatic fever after untreated streptococcal infection was assumed to be 37·5 times higher than that of a severe reaction to penicillin.[6]

Prevention of rheumatic fever is one of the main considerations in deciding whether to treat pharyngitis. Although now considered rare in the West, the disease remains a problem in Third World countries and even in developed ones where pockets of poverty and crowded living conditions persist.[7,8]

Since rheumatic fever is rare it is claimed that we should not give antibiotics solely to prevent it. However, no controlled studies have offered good evidence in favour of a change of policy.[9] Taking into account the low annual incidence of rheumatic fever and a 20-30% prevalence of β haemolytic streptococcal infection in people with sore throat, over 78 000 subjects would be required in a randomised trial to

Commentary: not enough evidence to decide

You would think that with all the resources going into medical research we would know whether antibiotics should routinely be used to treat sore throats. It is, after all, a simple question about a common condition. Nevertheless, we simply do not know. As Dr Shvartzman points out, huge numbers of patients would be needed to determine whether treating sore throat with antibiotics reduces the occurrence of rheumatic fever. However, in most developed countries I suspect that antibiotics are being used not to prevent rheumatic fever or glomerulonephritis but to shorten the duration of symptoms. A double blind randomised clinical trial looking at whether routine use of antibiotics reduces the time away from school or work and whether any reduction was justifiable in terms of financial cost and frequency of adverse effects would be much more manageable. Until such evidence is available it is not possible to come down one side or the other.—PETER C RUBIN, *professor of therapeutics, University of Nottingham*

show convincingly a 50% reduction in the attack rate with antibiotics.[9]

Penicillin reduces suppurative complications of streptococcal sore throat and brings about earlier resolution of fever and symptoms of pharyngitis.[4,9] The course may be shortened by 24-48 hours, which is an appreciable impact on working days lost by patients or parents of sick children. The widespread use of antibiotics may also have altered the natural course and epidemiology of streptococcal disease by interfering with person to person transmission and lessening the virulence of the organism. Some authors have challenged the concept of a carrier state, maintaining that patients with sore throat and a positive culture for group A β haemolytic streptococcus but with no serological response might also benefit from treatment.[10]

Comfortable policy

Patients often demand antibiotics because they are sure that it helps, based on their past experience. I am not sure that we have sufficient evidence to refuse to prescribe when such a refusal could jeopardise a relationship with the patient or an entire family.[11]

Doctors should develop a policy for treating sore throat that they feel comfortable with. This requires a decision about goals such as cost containment, avoidance of adverse outcomes, or reduction in the unnecessary use of antibiotics.[6] Occasional testing is warranted to determine the seasonal prevalence of streptococcal infection in the practice and to keep a check on your clinical acumen. A colleague told me of his experience with 100 consecutive patients who complained of sore throat and had a culture taken. When he felt certain that streptococci were present he was correct 64% of the time; when he was undecided the culture was positive in 16%; and when he was sure of a viral aetiology it was positive in 4% (B Bisharat, personal communication). The situation can still be summarised as it was over a generation ago by Stillerman and Bernstein: "If you are entirely comfortable selecting which patient to treat 10 days with antibiotics, perhaps you don't understand the situation."[12]

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THE POWER OF SOUND

We thought we knew . . .

We have lived with him for almost seven years, watched him grow from a baby, through toddlerhood into a schoolboy. We had worried about him, misdiagnosed him, and wept when finally the penny dropped—he was deaf. We were probably typical in the emotional readjustment, certainly fortunate in the quality of support we received from our son's consultant, paramedical staff, and from our family, church, and friends during the six years since diagnosis. We became involved in the deaf world, met other families, and so we thought we knew about deafness, we thought we understood. Last summer we discovered we did not.

Rarely in our professional lives do we see chronic illness, handicaps, or disabilities receding or being cured. If we could we would gain a deeper insight into the hidden effects of those conditions. All our supposed understanding did not prepare us for the change in our son. He received a cochlear implant and when he left the world of silence to hear for the first time the sound of his own voice, to hear the television and the cars, the school bell and the birds, he changed into a much more alert, confident, and mischievous little boy.

We had given lip service to the isolation of deafness, we knew it was difficult for him to belong in an oral group, or to break in with strangers. Often we felt hurt for him as he had withdrawn into secure adult company when he could not join in some games, but we thought that he was close to normal at home and in his school, where his own language was used. Our perception of the isolation had been of not comprehending speech, and of being left out in that way. Yet when he entered the world of sound (not yet the world of understanding or where speech or sounds had meaning) the change was amazing.

This was the beginning of "environmental awareness": through sound he knows better what is happening. At the time we said, "It is as though he has had the light switched on." We had not grasped the vacuum of silence.

He has only been in this new world a few months and has a long way to go—how much progress he will make is uncertain. Last month he made his first tentative steps into understanding—he recognises the telephone and can come when he is called.

We look forward with anticipation to his progress and we too are on our own voyage of discovery. . . .—JEAN McCLUNE *is a general practitioner in Belfast*